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EXAMINER
NGUYEN, PHUONGCHAU BA

ART UNIT	PAPER NUMBER
2665	10

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/854,234	Applicant(s) TUCK ET AL.
	Examiner Phuongchau Ba Nguyen	Art Unit 2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5-13-03 amendment* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,24,26,27 and 29-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21,24,26,27 and 29-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claim Objections

1. Claim 24 is objected to because of the following informalities: "cauterized" should be changed to ---characterized---. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 10 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 10 and 21 recited "ingress path...for receiving data packets"(line 4, claims 10 and 21) but also recited "data packets...output to the ingress path", does the multicast engine received/transmitted data packets in the same ingress path? Claims 1 and 27

also have the same problem wherein the second port for receiving and transmitting data (claim 27, lines 5, 10; claim 1, lines 3-4, 8-11).

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-21, 23-24, 26-27, 29-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, claim 1 is not seen how could the multicast-capable component coupled to an ingress and egress paths, wherein the ingress path for receiving the data packets and the egress path for outputting data packets, but then also recited that "data packets assigned for multicasting arrive at the port on the egress path and output to the ingress path". Please clarify how the egress and ingress paths interchanging their functions (i.e., receiving data

packets and outputting data packets) as claim 1. Claims 10, 16, 21, 27 also have the same problem as in claim 1.

Regarding the method claimed, claims 10 and 21 are vague and indefinite because claims are not clear which port (line 10, claim 10; line 9, claim 21) referred to (i.e., in lines 3-6, claim 10 & 21) ?

Claim 15 recites the limitation "the one or more fabric cards" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claims 1, 10, 15, 16, 21, 27 are vague and indefinite because claims are not clear which port at the multicast engine/component is used for receiving and transmitting data packet.

Claims 2-8, 11-14, 17-20, 23, 26, 29-32 are also rejected in virtue of their dependency to claims 1, 10, 16, 21, 24, 27.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 15-20 are rejected under 3 5 U.S.C. 1 02(e) as being anticipated by Takahashi (6,240,075).

Regarding claim 15:

Takahashi discloses a multicast engine 110 (fig.1), comprising:

one or more first ports 109 for communicating with one or more second ports 121 of one or switch elements (SI -S32); and circuitry 112 for modifying or replicating multicast packets routed to the engine; characterized in that multicast packets received from the one or more fabric cards (SI -S32) are replicated and/or modified as needed, and forwarded via the one or more first ports 109 to one of the one or more of the second ports 121.

Regarding claim 16:

Takahashi discloses a multicast-capable data router 80 (fig. 1) having a multicast-capable port 110 for replicating multicast data packets, the port 110 having at least one ingress path 109 into the port for receiving the data packets, at least one egress path 121 out of the port for outputting data packets, and

a multicast-capable component 112 coupled to the egress and ingress paths of the port, and the multicast-capable component for replicating or re-addressing the data packets; characterized in that data packets assigned for multicasting arrive at the port (i.e., at the ingress path 109) and are diverted to

the multicast- capable component 112, wherein the packets are replicated or re-addressed and forwarded (i.e., to the egress path 12 1).

Regarding claim 17:

Takahashi further discloses that the multicast- capable component 112 is integrated into the circuitry (a part) of the multicast-capable port 110 (fig.1):

Regarding claim 18:

Takahashi further discloses that the multicast-capable port is a fabric card port 110 (fig. 1).

Regarding claim 19:

Takahashi further discloses that the multicast-capable port 110 is the port of a fabric card 80 external to the router 80 (fig. I).

Regarding claim 20:

Takahashi further discloses that a table 118 (fig. 1) containing instructions for multicasting {col.3, line 67 to col.4, line 61.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10, 12-14, 21, 23-24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harriman (5,898,687) in view of Takahashi (6,240,075).

Regarding claim 10:

Harriman discloses a multicast-capable fabric card 110 within a data router 100 comprising: at least two ports 102 & 104 coupled to each other by data paths; and at least one multicast engine 200 coupled to at least one of the ports; at least one ingress path into each port for receiving data packets; at

least one egress path out of each port for outputting data packets; at characterized in that data packets assigned for multicasting arrive at the multicast-capable fabric card 110 (i.e., at the input ports 102) and are delivered to the multicast engine 200 wherein they are replicated and/or modified as needed for multicast and output to the ingress path into the port.

Harriman does not explicitly disclose that the multicast engine is integrated as a part of the port of the fabric card in the router. However, in the same field of endeavor, Takahashi (6,240,075) discloses that the multicast engine 112 is integrated as a part of a port of a line/fabric card 110 in the router 10 (fig.1, Takahashi). Therefore, it would have been obvious to an artisan to apply Takahashi's teaching into Harriman's system and the motivation being to minimize the same packets transmission on the network thus reducing the lost packets by congestion.

Regarding claim 12: Harriman discloses that a switching facility (252, fig.2) is provided on the card, the switching facility for managing port-to-port communication.

Regarding claim 13:

Harriman discloses that the multicast-capable port 110 is an integrated circuit.

Regarding claim 14:

Harriman discloses that there is a table (260, fig.2) containing instruction for multicasting, table entries being configured by software (control logic 250, which is including read and write pointers 256 & 258 controlled by controller 254).

Regarding claim 21:

Harriman discloses a multicast- capable data router 100 (fig.1) having a fabric card 110 comprising circuitry for at least two ports 102 & 104 coupled to each other by data paths (125, 132, 134, 136 & 255; fig.2), and at least one multicast engine 200 (fig.2); characterized in that data packets assigned for multicasting arrive at the fabric card I 10 and are delivered to the multicast

engine 200 (fig.1) wherein they are replicated and/or modified as needed for multicast and forwarded {col.4, lines 21 -5 1; col.6, lines 16-391.

Regarding claim 24:

Harriman discloses a multicast- capable data router (100, fig.1), comprising

a multicast engine 200 (fig.2) having one or more first ports (input ports 102; fig.1) for communicating with one or more second ports (output ports 104; fig.1) of one or more fabric cards 110, and port circuitry 250 for modifying or replicating multicast packets routed to the engine 200; characterized in that multicast packets received from the one or more fabric cards 110 are replicated and/or modified as needed, and forwarded via one or more of the first ports 102 to one or more of the second ports 104.

Regarding claims 23, 26:

Harriman discloses that a table (260, fig.2) containing instructions for multicasting Jcol.5, lines 26-45).

Regarding claims 27, 29 & 31:

Harriman (5,898,687) discloses a method for multicasting comprising steps of:

(a) providing a multicast engine 200 (fig.2) within a router 100, wherein the multicast engine 200 having one or more first ports 255 for communicating with second ports (12 5, 13 2, 134, 136) of the router 100;

(b) receiving multicast packets at one of the second ports 125 and sending the multicast packets to one of the multicast engines 200 via the first ports 255;

(c) replicating and/or modifying (by 250, fig.2) the data packets for multicasting according to tabled instructions 260 associated with the multicast engine 200 (claim 31);

(d) forwarding the replicated or modified packets to individual ones 125 of the second ports (via 255 through shared memory 112 & address pointer 128; fig.1).

Harriman does not explicitly disclose providing a plurality of multicast engines within a router; and wherein the multicast engine is integrated as a part of a port of a line card in the router.

However, in the same field of endeavor, Takahashi (6,240,075) discloses that a plurality of multicast engines (112, 130; fig.1) wherein the multicast engine 112 is integrated as a part of a port of a line/fabric card 110 in the router 10 (fig.1, Takahashi). Therefore, it would have been obvious to an artisan to apply Takahashi's teaching into Harriman's system and the motivation being to minimize the same packets transmission on the network thus reducing the lost packets by congestion, and to provide simultaneous multicast processing as required by customer {col.4, lines 22-28, Takahashi}.

Regarding claim 30:

Harriman does not disclose the claimed features. However, in the same field of endeavor, Takahashi discloses that the multicast engine 110 is a stand-alone component (fig.1) and the second ports (109), with which the first ports 255 communicate, are ports of one or more fabric cards 80 in the router

10 (fig.1, Takahashi). Therefore, it would have been obvious to an artisan to apply Takahashi's teaching into Harriman's system and the motivation being to provide simultaneous multicast processing as required by customer {col.4, lines 22-28, Takahashi}.

6. Claim 11 is rejected under 3 5 U.S.C. 1 03(a) as being unpatentable over Harriman (5,898,687) over Chao (5,724,351).

Regarding claim 11:

Harriman does not explicitly disclose that the multicast- capable fabric card coupled by port paths to other cards within the same router.

Chao (5,724,35 1) discloses the multicast-capable fabric card 104 coupled by port paths (1 -N input ports and 1 -M & N-M+ 1 -N output ports; fig.1) to other cards (SSM1 -SSMk 104) within the same router 100. Therefore it would have been obvious to a skilled artisan to implement the router 100 having a plurality of switches (SSMI -SSMk 104) as taught by Chao into the router 100 in Harriman and the motivation being to minimize the throughput value at output ports (col.1 1, lines 51 -58, Chao).

8. Claim 32 is rejected under 35 U.S.C. I 03(a) as being unpatentable over Harriman (5,898,687) over Takahashi (6,240,075) as applied to claim 27 above, and further in view of Teraslinna (4,991,171).

Regarding claim 32:

Harriman and Takahashi do not explicitly disclose that the table instructions 260 associated with individual multicast engines 200 are updated periodically.

However, in the same field of endeavor, Teraslinna (4,991,171) discloses translation table frequently (periodically) updated Icol.1, lines 60-62). Therefore, it would have been obvious to a skilled artisan to apply Teraslinna's teaching into the table in multicast engine as taught by Harriman's system and the motivation being to maintain the consistency of the translation table data, especially when packet destination are added or deleted. ,

9. Claims 1 -8 are rejected under 3 5 U.S.C. 103(a) as being unpatentable over Holden (6,396,809) over Takahashi (6,240,075).

Regarding claim 1:

Holden (6,396,809) discloses a fabric card (switch card, fig.5) having a multiple ports (port card, fig.5), one or more a multicast-capable ports for replicating multicast data packets comprising:

at least one ingress path (x32 from QSE WAC-488 #1) into the port for receiving the data packets;

at least one egress path (x32 to QSE WAC-488 #8) out of the port for outputting data packets;

a multicast-capable component (QRT WAC-487) coupled to the egress and ingress paths of the port (port card), the multicast-capable component for replicating the replicated data packets;

characterized in that data packets assigned for multicasting arrive at the port on the egress path (x32 from QSE WAC-488 #8) and are diverted to the multicast-capable component QSE WAC-487), wherein the packets are replicated and output to the ingress path into the port (x32 from QSE WAC-488 #1).

Holden does not explicitly disclose the multicast-capable component for replicating and readdressing the replicated data packets. However, in the same field of endeavor, Takahashi (6,240,075) discloses that the multicast-capable component 112 (fig.1) for replicating and readdressing (inserted the foregoing data from memory 118) the replicated data packets. Therefore, it would have been obvious to an artisan to apply Takahashi's teaching into Holden's system and the motivation being to simultaneous multicast processing as required by customer {col.4, lines 22-28, Takahashi}.

Regarding claim 2:

Holden does not disclose the claimed features. However, in the same field of endeavor, Takahashi discloses that the port 110 is hosted on a card 110 within a data router 10 (fig. 1, Takahashi). Therefore, it would have been obvious to an artisan to apply Takahashi's teaching into Holden's system and the motivation being to simultaneous multicast processing as required by customer {col.4, lines 22-28, Takahashi}.

Regarding claim 3: Holden discloses that the multicast-capable port (port card) coupled to other ingress/egress ports (x32 from/to WAC-488) of the card (switch card){fig.5, Holden}.

Regarding claims 4-5:

Holden does not disclose the claimed features. However, in the same field of endeavor, Takahashi discloses that more than one multicast-capable port 110 & 130 is mounted on a same card 10 (fig. 1; Takahashi). Therefore, it would have been obvious to a skilled artisan to apply the plurality of multicast-capable ports on a satellite system 10 (a same card) as taught by Takahashi into Holden's system and the motivation being to provide simultaneous multicast processing as required by customer {col.4, lines 22-28, Takahashi}.

Regarding claim 6:

Holden further discloses that the data router 488 (in port card, fig.5) is connected to other like data routers 488 (in the switch card) distributed over

network topology and wherein individual one of the multicast-capable ports associated therewith are responsible for a portion of a multicast project.

Regarding claim 7:

Holden discloses that the multicast-capable port (port card) is an integrated circuit (fig.5).

Regarding claim 8:

Holden does not disclose the claimed features. However, in the same field of endeavor, Takahashi discloses that the multicast-capable component 112 is implemented as an integrated circuit (fig.1) externally from the port 100. Therefore, it would have been obvious to an artisan to apply Takahashi's teaching into Holden's system and the motivation being to provide simultaneous multicast processing as required by customer {col.4, lines 22-28, Takahashi}.

10. Claim 9 is rejected under 3 5 U.S.C. 1 03(a) as being unpatentable over Holden (6,396,809) over Takahashi (6,240,075) as applied to claim 4 above, and further in view of Harriman (5,898,687).

Regarding claim 9:

Holden does not disclose the claimed features. However, in the same field of endeavor, Harriman discloses that there is a table (260, fig.2) containing instruction for multicasting, table entries being configured by software (control logic 250, which is including read and write pointers 256 & 258 controlled by controller 254). Therefore, it would have been obvious to an artisan to apply Harriman's teaching into Holden's system and the motivation being to provide multicasting only the selected address specified by the control information thus increasing replication rate of multicast operation {Takahashi, col. 5, line 26-col.6, line 21}.

Response to Arguments

5. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

A/. Applicant argued in page 11 that Takahashi does not teach replicating and/or modifying packets and then forwarding the packet via port 109 to port 121.

In reply, applicant is directed to column 4, lines 8-10 of Takahashi wherein 112 replicated ATM cells and transmitted from port 121 to input port 109 via switch 80.

B/. Applicant argued that Takahashi does not teach that element 110 is a port at all.

In reply, applicant is directed to element 110 (multicast-capable port) wherein element 110 comprises a 112 element for replicating ATM cells.

C/. Applicant argued that Takahashi does not teach the multicast-capable port in a fabric card.

In reply, applicant is directed to figure 1 of Takahashi wherein the satellite 10 (fabric card) comprises multicast replication module 110 (a multicast-capable port).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchau Ba Nguyen whose telephone number is 703-305-0093. The examiner can normally be reached on Monday-Friday from 10:00 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 703-308-6602. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

PN

Phuongchau Ba Nguyen
Examiner
Art Unit 2665

July 28, 2003

7/28/03